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A new species of the genus *Eriocrania* (Lepidoptera, Eriocraniidae) from Japan

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Abstract *Eriocrania komaii* sp. nov. is described and figured from Mt Izumi-Katsuragi, Osaka Prefecture, Japan. The larva of this species is suspected to feed on the leaves of *Sorbus japonica* (Decne.) Hedlund (Rosaceae).

Key words *Eriocrania*, new species, *Sorbus japonica*, Rosaceae, Japan.

Introduction

The leaf mining moth family Eriocraniidae is restricted to the Holarctic region where 24 species in six genera have been recorded (Kristensen, 1998). In Japan, four species in two genera have been known so far (Moriuti, 1982; Kozlov, 1997). The host range of the family is restricted to plants of the families Fagaceae and Betulaceae with a few exceptions (Hering, 1957; Davis, 1978; Kuroko, 1989, 1990). Of the four Japanese species, *Eriocrania semipurpurella* (Stephen, 1834) and *E. sparrmannella* (Bosc, 1791) feed on the leaves of *Betula platyphylla* Sukatcher var. *japonica* (Miq.) Hara (Betulaceae), *E. sakhalinella* Kozlov, 1983 on *Alnus hirusuta* Turcz. (Betulaceae), and *Issikiocrania japonicella* Moriuti, 1982 on *Fagus crenata* Blume (Fagaceae) (Mizukawa *et al.*, 2004).

In April 1989, one of us (Hashimoto) captured an eriocraniid moth with a distinct maculation on Mt Izumi-Katsuragi, Osaka Prefecture. In April 2002, two additional specimens were collected at the same locality. These specimens have typical *Eriocrania* venation in both fore- and hindwings, and are considered to represent a new species readily distinguished from the known congeners by the wing maculation and the shape of the female genitalia.

In this paper, we describe it as new and provide brief notes on the biology. Terminology used for the adult morphology mainly follows Davis (1978).

Eriocrania komaii sp. nov. (Figs 1–5)

Forewing length 4 mm (holotype: 3.2 mm). Wing expanse 7–8 mm.

Head. Covered with long, pale yellow hairs, sparsely mixed with fuscous hairs at vertex. Antennae approximately 2 mm in length. Labrum ovate with a subacuminate apex. Mandible vestigial. Maxillary and labial palpi yellow, scattered with fuscous brown scales. Apical segment of maxillary palpus simple in shape, with five apical and two relatively long and stout basal sensory setae (Fig. 3A).

Thorax. Broadly covered with bronze scales, scattered with long pale yellow hairs. Legs almost covered with whitish yellow scales; epiphysis absent. Forewing nearly dark purple

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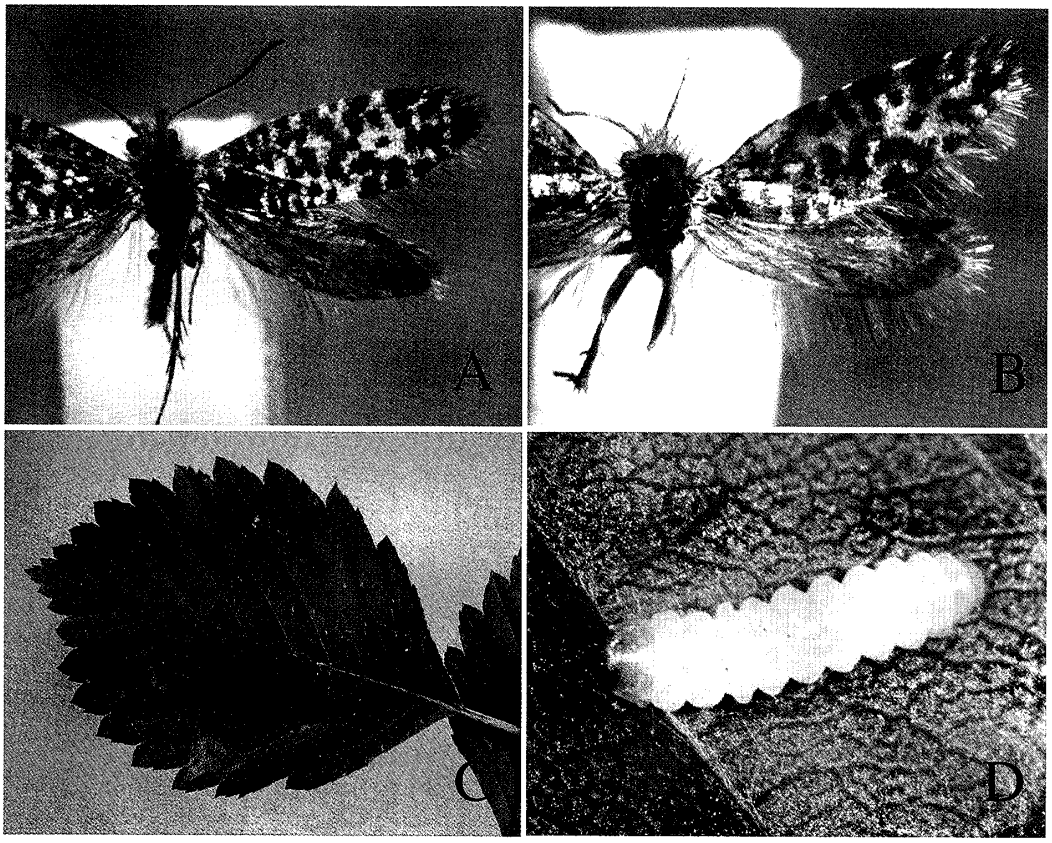

Fig. 1. *Eriocrania komaii* sp. nov. A. Holotype ♂. B. Paratype ♀. C. Larval mine on *Sorbus japonica*. D. Mature larva, ventral view.

luster, with several pale golden striae which are fused reticulately (Figs 1A, B); Sc and R_1 simple; R_2 and R_3 entirely fused; R_4 and R_5 stalked at basal half. Hindwing much paler, pale gray, thinly covered with dark purplish gold scales at apical one-third; Sc and R_1 simple; R_4 and R_5 stalked at about basal half (Fig. 2); scales spatulate, not hairy (Fig. 3B); four costal spines present at base.

Abdomen. Sparsely covered with long grayish to whitish fuscous hairs dorsally, white ventrally. Sternite IV with a pair of moderately large, oval fenestrae in female (Fig. 3D), absent in male (Fig. 3C). Sternite V with a pair of papiliform tubercules in female, absent in male (Figs 3C, D).

Male genitalia (Fig. 4). Uncus bilobed, relatively broad in lateral view; its apical ends widely separated for a distance equal to the length. Socius present. Anal tube completely membranous. Vinculum with caudal margin bilobed medially; a pair of cephalic processes relatively broad in lateral view. Juxta broad, broadest at anterior margin, gradually tapering, distorted-triangular shaped posteriorly. Aedeagus swollen, hemispherical at base; ventral and dorsal phallic branches relatively thick; dorsal branch blade-like, rounded apically; ventral branch twisted and bent, somewhat pointed apically.

Female genitalia (Fig. 5). Ovipositor broad, about three-quarters width of abdominal segment VIII; apex acuminate, lateral edge serrulate. Corpus bursae entirely membranous, without spines. Vaginal sclerite weakly sclerotized, except for dorsal branch and slender caudal extension; dorsal branch bifurcate; median ventral keel absent. Segment IX without

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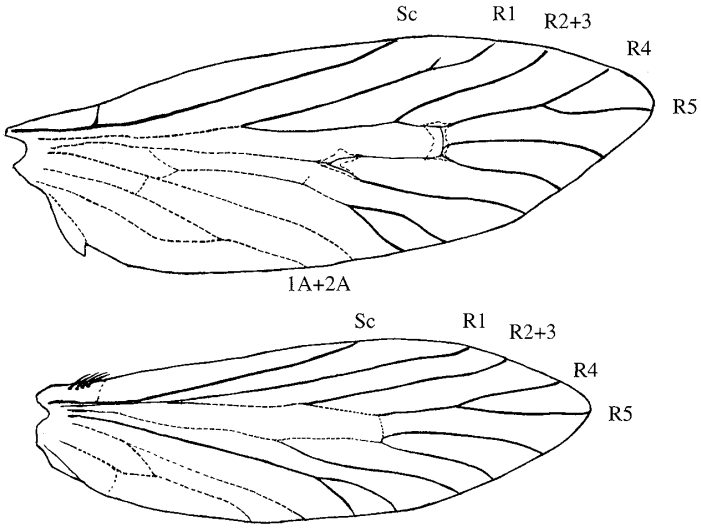

Fig. 2. Wing venation of *Eriocrania komaii* sp. nov.

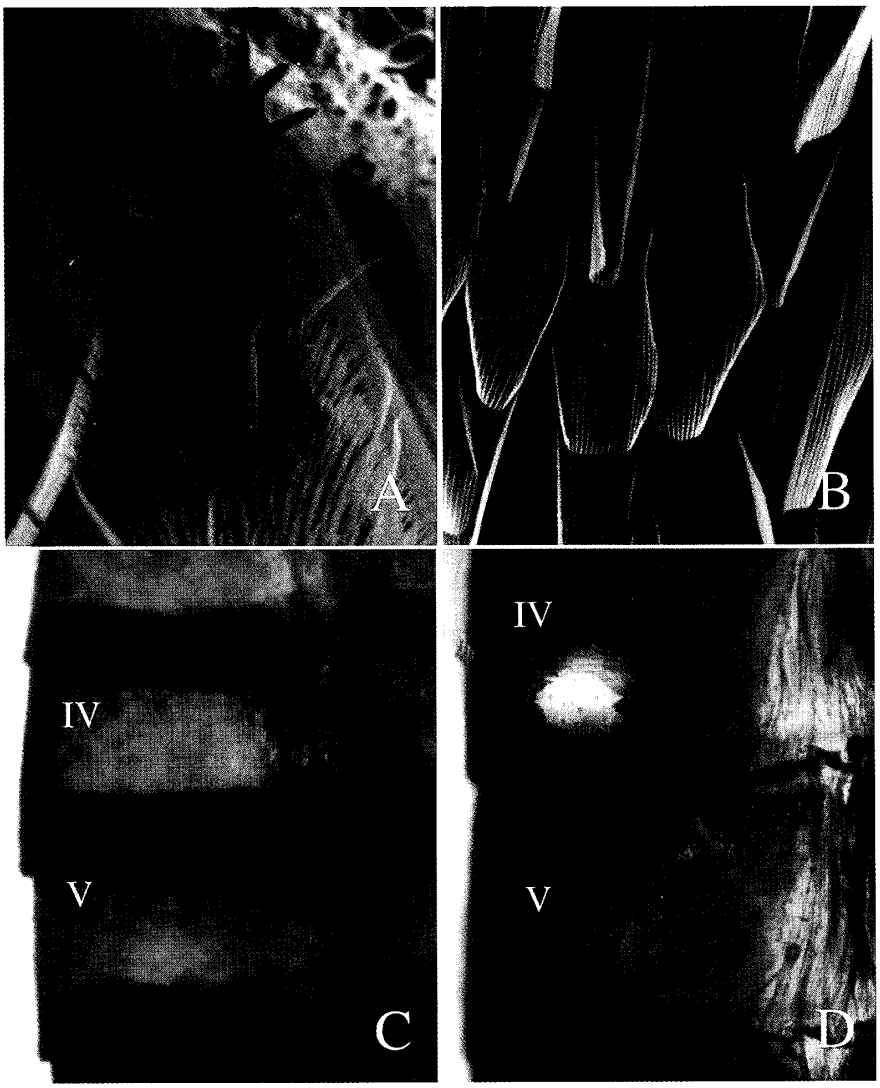

Fig. 3. Adult structures of *Eriocrania komaii* sp. nov. A. Maxillary palpus. B. Hindwing scales. C. Abdominal sternites IV–V, male. D. *Ditto*, fenestra and tubercule of female.

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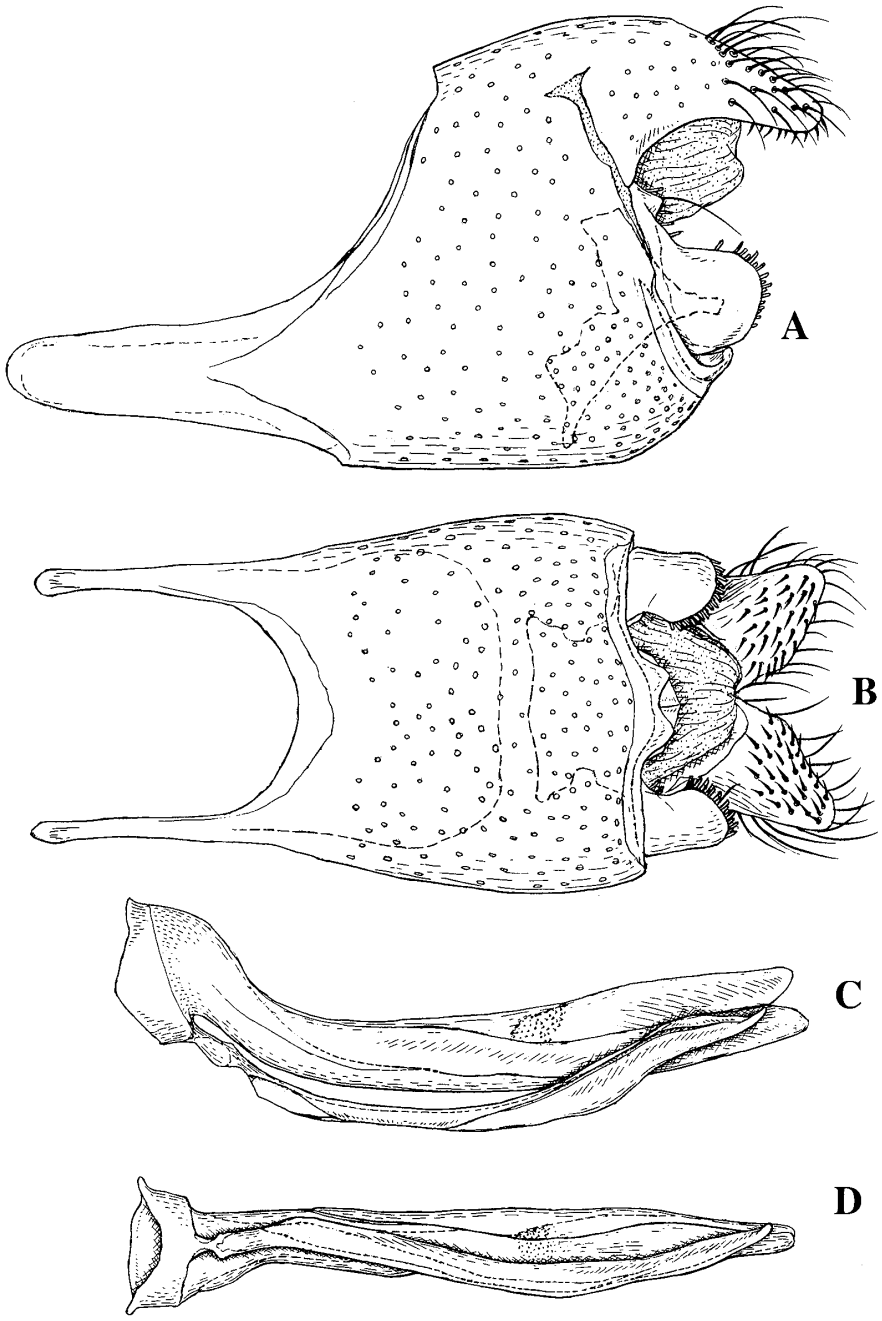

Fig. 4. Male genitalia of *Eriocrania komaii* sp. nov. A. Whole genitalia except aedeagus, lateral view. B. *Ditto*, ventral view. C. Aedeagus, lateral view. D. *Ditto*, ventral view.

mid-ventral spinose pocket.

Material examined. JAPAN [Honshu]. Holotype ♂, Mt Izumi-Katsuragi, Osaka Pref., 27. iv. 2002, T. Hirowatari & B. W. Lee. Paratypes. 1♀, same label as holotype; 1♀, same locality as holotype, 29. iv. 1989, S. Hashimoto. All type specimens are deposited in the Entomological Laboratory, Osaka Prefecture University, Sakai.

Distribution. Japan, Honshu (Osaka Prefecture).

Etymology. This species is named in honor of Dr Furumi Komai who attracted our atten-

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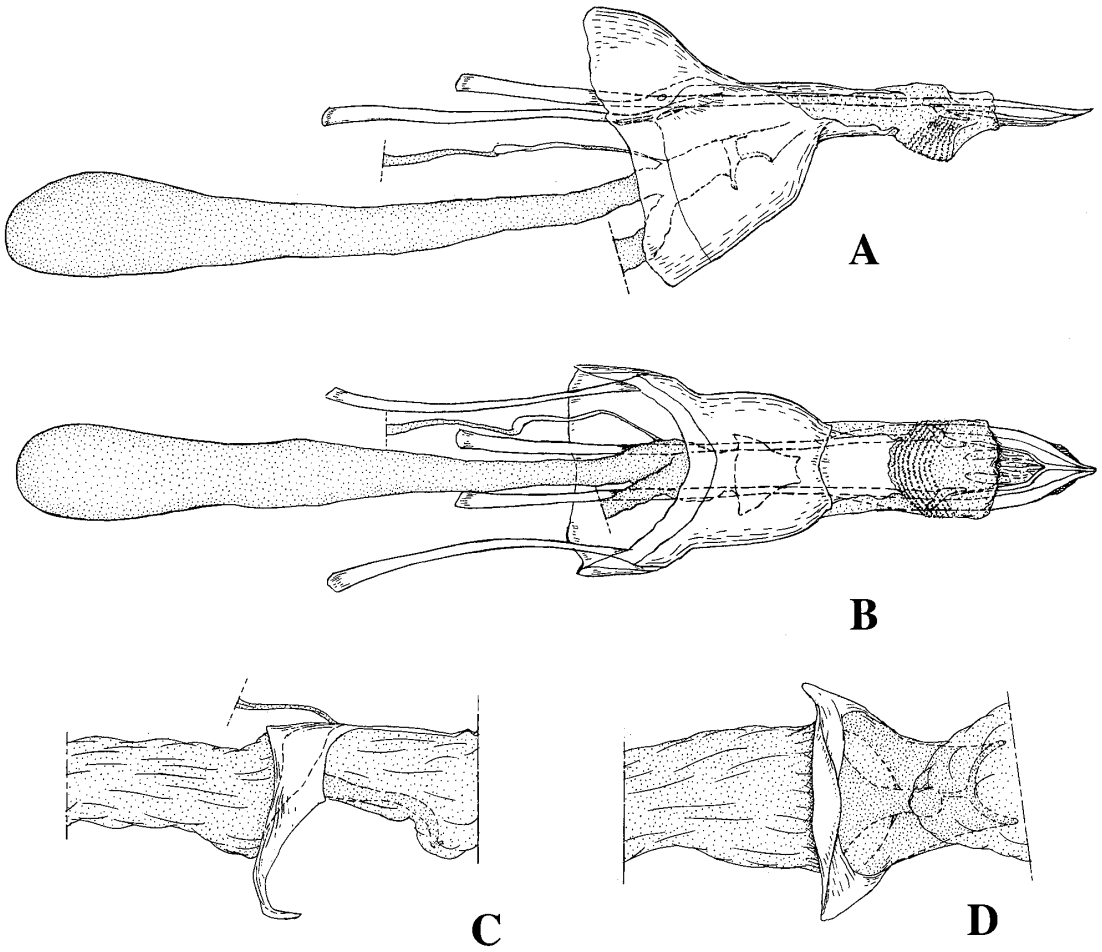

Fig. 5. Female genitalia of *Eriocrania komaii* sp. nov. A. Whole genitalia, lateral view. B. *Ditto*, ventral view. C. Vaginal sclerite, lateral view. D. *Ditto*, ventral view.

tion to the supposed larvae of this species from *Sorbus japonica* as discussed below.

Biology. On 27 April 2002, on a fine sunny day, two adults of *Eriocrania komaii* visiting the flowers of *Quercus serrata* Murray near the top of Mt Izumi-Katsuragi (35°21′N 135°26′E, 850 m), southern part of Osaka Prefecture, were captured flying with some adelids and incurvariids, such as *Adela reaumurella* (Linnaeus), *Paraclemensia caerulea* (Issiki) and *P. incerta* (Christoph), although generally eriocraniids are not flower-visitors (Kristensen, 1998).

About three weeks later, eriocraniid larval mines were found on the leaves of *Sorbus japonica* (Rosaceae) near the collecting site of *E. komaii*. Our fieldwork in Mt Izumi-Katsuragi has recognized that two other eriocraniids inhabit sympatrically with the present species. One is *Eriocrania* sp. feeding on *Carpinus laxiflora* (Sieb. et Zucc.) Blume (Betulaceae) and the other is *Issikiocrania japonicella* Moriuti on *Fagus crenata* Blume (Fagaceae). However, adults of these two species occurred from early to mid April about 15 to 20 days earlier than those of *E. komaii*, and their larvae had already dropped to the ground from their host plants when the larvae feeding on *Sorbus japonica* became full-grown. Therefore, it was strongly suggested that *E. komaii* feeds on *Sorbus japonica*.

The larvae were captured from sunny leaves in various parts of the host tree varying from

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low to high, but the larval density was extremely low. According to Dr Komai (*pers. comm.*), eriocraniid larvae feeding on *Sorbus japonica* were rather abundant in the 1980's when he first found the mines on leaves.

Remarks. We placed this new species in the genus *Eriocrania* Zeller, 1851 based on the wing venation (R_2 and R_3 veins completely fused, and R_4 and R_5 stalked about their half length in the both wings as in Fig. 2). This species is easily distinguishable from other *Eriocrania* species by the following characters: 1) the forewing shows a reticulate maculation with gold striae and therefore seems to have purple luster blotches; 2) the male genitalia possess broad anterior processes of the vinculum; and 3) the female ovipositor is broad.

The host range of the family Eriocraniidae is mainly restricted to two plant families, Fagaceae and Betulaceae, of the order Fagales. Davis (1978) and Kuroko (1990) referred to eriocraniid larvae utilizing plants of the family Rosaceae of the order Rosales. However, no adults have been precisely associated with these larvae. Contrary to the relationship of the phylogenetic hypothesis based on morphology (Cronquist, 1988), recent molecular analysis has suggested that Rosaceae are closely related to Betulaceae and Fagaceae in plant phylogenetic relationships (Soltis *et al.*, 1999). If a relationship between the adults and the supposed larvae of *Eriocrania komaii* becomes clear by rearing, this species will play an important role in considering host preference evolution of the family Eriocraniidae.

Acknowledgments

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摘　　要

日本産スイコバネガ属 (スイコバネガ科) の一新種 (水川　瞳. 広渡俊哉. 橋本里志)

1989年と2002年の4月下旬に, 大阪府和泉葛城山において特異な斑紋をもつスイコバネガ科の成虫が採集された. 翅脈の特徴から, この種がスイコバネガ *Eriocrania* 属に含まれること, また, 雌雄交尾器などから新種であることが明らかになったので記載した.

Eriocrania komaii sp. nov. ムラサキマダラスイコバネ (新称)

本種は, 前翅に金色の条線が融合し網目状となる (暗紫色の小斑点を多数もつ) こと, ビンクルムから前方に伸びる一組の突起が幅広いこと, 雌交尾器の産卵管が幅広いことなどで同属の他種と区別できる. また, 本種成虫の採集からおよそ3週間後, 採集地点付近でバラ科のウラジロノキに潜葉しているスイコバネガ科の幼虫が採集された. 筆者らは和泉葛城山には本種の他にアカシデに潜る種 (*Eriocrania* sp.) とブナに潜る種 (イッシキスイコバネ *Issikiocrania japonicella* Moriuti) が同所的に生息することを確認しているが, これら2種の成虫は4月上中旬に出現するのに対して, 本種成虫は4月下旬にミドリヒゲナガやムラサキツヤマガリガなどとともにコナラの花に来ていたところを採集されており, 幼虫の出現時期もずれていた. これらのことから,ウラジロノキに潜る本科の幼虫は本種の可能性が高いと推測された. スイコバネガ科はブナ科とカバノキ科の植物を主に利用することが知られている. これまでにも Davis (1987) と黒子 (1990) がバラ科植物に潜るスイコバネガ科の幼虫について報告しているが成虫の記録はない. 本種成虫と潜葉していた幼虫の関連が明らかになれば, スイコバネガ科の寄主植物について重要な情報となる.

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